



Pavla Hanačková & Tereza Makovská
Inna Chernyak

THE TRICKY QUESTIONS OF SMARTIE JOEY



???

... about nature



... about weather



... about universe

???

THE TRICKY QUESTIONS OF SMARTIE JOEY



?



PLAYFUL
BOOK WITH
INTERACTIVE
ELEMENTS

???



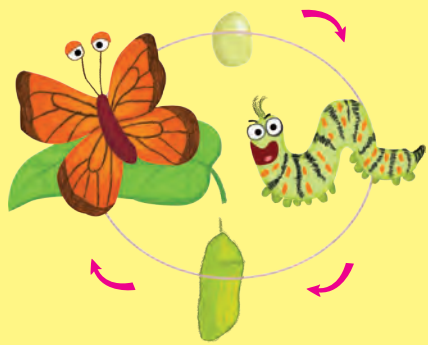
... about the human body



?

B4U PUBLISHING

1. HOW DOES A CATERPILLAR TURN INTO A BUTTERFLY?



Before we can feast our eyes on a beautiful butterfly, we must wait for it to undergo a complex development cycle, called as **transformation**.

2. WHY DO MOTHS FOLLOW THE LIGHT?

When there were no cities in the wilderness, therefore no lights, the Moon provided the strongest lighting of all. Moths use the Moon for **navigation** – they try to fly in a manner that makes sure the moonlight always falls on the same side of their wings and under the same angle – that's how they know they're going straight. But if there's another light source around, moths get confused and start following it. Notice that when moths come closer to a lightbulb, they circle it and fly closer and closer around it until they start hitting into it.



NATURE SOMETIMES HAS REALLY COOL IDEAS!

3. WHAT ARE INSECTS GOOD FOR?

Insects can be truly useful! They eliminate pests – ladybirds, for example, help farmers by eating plant-infesting aphids. They recycle waste such as rotting leaves, dead plants, and animals – that makes them natural cleaners. Some of them are **pollinators**; they carry pollen from one plant to another, and thus allow new greenery to grow. People often take inspiration from insects – many inventions were based on their body structure or behaviour. Apart from that, they make things that are beneficial to people – bees provide us with honey while silkworm create silk.

HELP!



5. WHY DO BEES & WASPS BUZZ?

The buzzing sound is created when their membranous wings **quiver** (or vibrate). The more insects flap their wings, the higher the sound gets. In case of bees and wasps, buzzing also works as a warning signal – if you disturb them, the buzzing gets louder and you should leave them alone if you don't want to be stung.

NOM NOM!



4. WHY DO LEAVES CHANGE COLOUR IN THE AUTUMN?



WOOF!

During the spring and summer seasons, leaves are green due to the pigment called **chlorophyll**. This pigment captures sun energy and by way of photosynthesis creates substances which are important for the plant. However, the leaves also contain other pigments: yellow and red ones. In autumn, the green colour falls apart, but the others remain – that's why the leaves suddenly have a different colour.

6. WHY DO DEER SHED THEIR ANTLERS?

It's important for deer to have their antlers in a working order. Each spring they exchange their damaged antlers for a pair of new ones, thus increasing their chances in the autumn fight for females. Or it might be a reaction to cruel winter frosts. Over summer, the antlers are nourished by the surface skin which is well-supplied with blood, but in winter they **dry up** and get brittle which is why they need to be replaced. It's also possible that deer renew the antlers in order to maintain an appropriate ratio of their body and antler size.

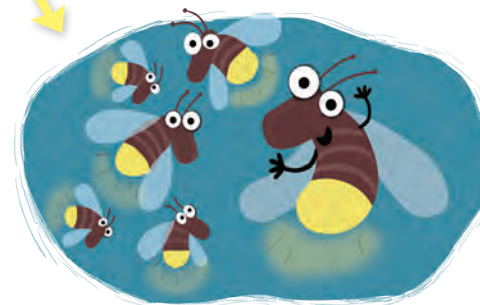


7. HOW DO BATS FIND THEIR WAY IN THE DARK?



Bats are capable of flying in pitch black due to their excellent hearing and mainly sense of navigation – **echolocation**. The bat emits sound waves which are reflected by an object back into the animal's ear, just like an echo. That's how the bat infallibly knows what kind of an object is ahead, and can avoid it. Or eat it if it's food.

8. WHY DO FIREFLIES GLOW IN THE DARK?



These night bugs create their own light – they're basically flying lightbulbs. The scientific name of the light they create is **bioluminescence**. Fireflies have heat-producing luminous organs on their bellies. After a firefly's brain issues an order to light up, special chemicals are released into the body and travel into the luminous organs. Once there, they mix with oxygen, and voilà! The light's here. When several fireflies light up at once, their light is so bright that you might use it to read a book.

9. WHY DO SOME BIRDS FLY IN A V-SHAPE?

Birds can make various formations when flying. Birds that move into warm regions are the main ones flying in a **V-formation**. They do it because it's advantageous to them – it makes their life a little bit easier during long flights. The leader at the top ploughs through the air, helping those who fly in the back. Those behind use air circulation to glide – the air lifts them up. The birds take regular turns in the lead and each one of them spends the same amount of time in the front.



10. WHY DO CERTAIN ANIMALS SLEEP THROUGH THE WINTER?

In winter, when the wilderness lies down to sleep and food is scarce, animals need to be able to cope. Some of them move to warmer regions, others choose to sleep: before winter arrives, they fatten up and find a shelter. Most of them aren't eating while they're sleeping – or **hibernating** – and gain energy from their own subcutaneous fat. Winter sleepers are divided into full and partial ones. Those fully hibernating sleep through the winter: they consist of, for example, hedgehogs, dormice, and some bats.



11. WHY ARE FOUR LEAF CLOVERS SO HARD TO FIND?

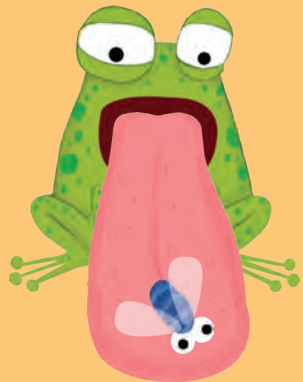
According to scientists, you'll find one single four leaf clover among tens of thousands of clovers. Why? There are many kinds of clovers, but most of them have only three leaves. If there's a clover with four or even more leaves, it has a **mutation** in its DNA – a deviation from the norm. It is caused by a special gene which manifests itself in some clover plants. The world record holder is a Japanese clover stem with incredible 56 leaves.

13. WHY ARE SEAS SALTY?

Pearls are created in the shells of freshwater and sea animals – **Mollusca**. The sea ones are called pearl oysters while the freshwater ones are known as freshwater pearl mussels.

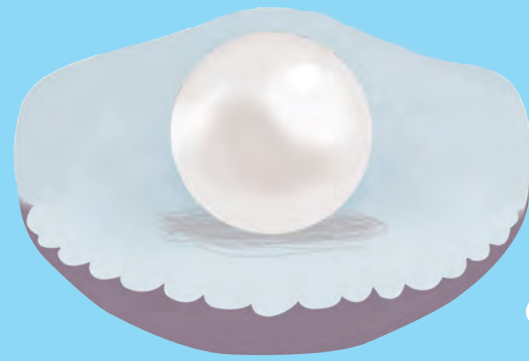
Because of various **mineral salts**. These salts get into seas either from the mainland, or from volcanic vents and rocks in the sea bottom. Every time it rains, a small amount of mineral salts from rocks on the mainland flows down into rivers which then gradually carry it all the way down to the sea. Also, the movement of water disturb the sea bottom, releasing further minerals into the water. Imagine, though, that the saltiness of sea water differs! The equator is warm, making the local water saltier, whereas Pole waters are diluted by the melting ice.

14. HOW DO FROGS HUNT?



Almost all frog species are **carnivorous** – they feast mainly on insects, but when offered small animals, such as worms, spiders, or tiny fish, they won't turn them down. Most frogs have a sticky tongue which they use to catch prey. When a frog waits for passing insects, it can quickly and unexpectedly dart out its tongue and cause the insect to stick to it. Then, the frog immediately swallows it. And what do you know, it can do all of this in a mere second!

12. HOW DOES A PEARL COME INTO BEING?



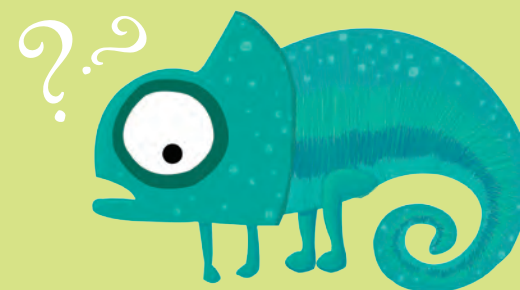
16. ARE FISH THIRSTY?



Just like people, fish need water to survive. There's a big difference between freshwater fish (those living in ponds and rivers) and the fish that live in the sea. In a pond, water enters fish automatically because they suck it in with the entire surface of their bodies. Meaning, they don't purposefully drink water. On the other hand, sea fish drink water basically all the time. And if they're supposed to drink, they must be thirsty. Unlike people, sea fish can drink salt water because they're able to discharge the salt through their **gills**.

19. HOW DO CHAMELEONS CHANGE COLOUR?

Did you think that chameleons change colour based on their environment? It's only partially true. In the jungle, protective colouring allows chameleons to **blend in** with the surrounding greenery, but the colours are changed based on the animal's mood and disposition. And how does this changing of colours happen?



17. HOW DOES FIRE COME INTO BEING?

By a **chemical reaction** of oxygen with some kind of a fuel – for example gas or wood. In order for fire to be created, the fuel must be heated to reach temperatures which are sufficiently high for the fuel to ignite. Fire can be started in several ways – for example striking, rubbing, directing a beam of light into a single spot, or simply with a match. The side effect of this entire reaction is the release of a large amount of heat which maintains the whole process, resulting in the fire burning.



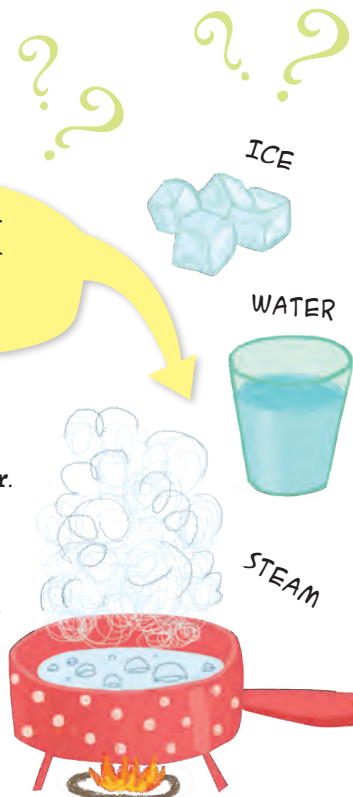
18. WHY DO EARTHWORMS CRAWL OUTSIDE WHEN IT'S RAINING?

You surely know that earthworms dig **pathways** and **channels** in earth. They aerate and loosen the soil in this way. When it's raining, though, earthworms crawl outside.



20. ARE WATER, ICE & STEAM ONE AND THE SAME?

Yes – it's all just water in a different coat. You can encounter it in one of three forms or states – meaning **ice**, **steam**, or **liquid water**. The next time you're lounging by a swimming pool in summer, notice that the water evaporates after a while. That's because its state has changed – steam is actually invisible water. In winter when it's freezing, water freezes as well. By doing so, it increases its volume, and because its denser than liquid water it floats on the surface.



THE TRICKY QUESTIONS OF SMARTIE JOEY

Written by Pavla Hanáčková & Tereza Makovská
Illustrations by Inna Chernyak

Why is the sky blue? Why do earthworms come out after rain? How many bones are there in human body? And where does the wind come from? And why ...? Children ask a lot of questions. All they need to do is to open this book and little Joey will help to answer them. From time to time, children will have to look under the flap, pull or rotate something. Not only will they also have fun with various mechanisms that accompany both titles, they'll learn something new! Let's discover new things! Why? Why not!

80
QUESTIONS
AND ANSWERS



b4u publishing
www.b4upublishing.com

© Designed by B4U Publishing,
member of Albatros Media Group, 2017.
Author: Pavla Hanáčková, Tereza Makovská
Illustrator: Inna Chernyak
All rights reserved.

WARNING: CHOKING HAZARD – Small parts.
Not suitable for children under 36 months.



ISBN + EAN

